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Passed March 24th. 1827
W. L. H.

An Inaugural Dissertation:

on

Hydrothorax or Dropsy of the Chest.

For the degree of Doctor of Medicine.

By Pugh Houston.

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Hydrothorax as its etymology imports is a preternatural, or morbid accumulation of a serous or watery fluid within the chest

There is some variety in the forms of this particular species of dropsy: according as the fluid is effused into the cellular texture of the lungs themselves, constituting anasarca pulmonalis: into the pericardium, called hydro-pericardium; encysted in an adventitious membrane, denominated hydatids: or as it floats loosely in one or both of the sacks of the pleura or cavities of the thorax: and it also exists, as a part of universal dropsy.

But since the symptoms are but little modified by these varieties, and they all exact pretty nearly an identity of treatment, I shall not attempt at any discrimination, but merely give an outline of that form, in which the fluid floats in one or both of the cavities of the chest.

Having nothing preliminary to offer, I shall commence by making a few remarks on the pathology and causes of the disease.

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The true pathology of hydrothorax (as well as of dropsy in general) seems, hitherto, not to have been generally understood; and at the present day, very different views as to its true nature are held forth by different medical men.

While some are of opinion, that it is a disease of debility, originating in an exhausted and cachectic condition of the system: others, (rejecting entirely these notions) tell us that we must look for the true and primary disease, in inflammation, or irritation.

Having been taught by some of my preceptors, (whose opinions I am ever ready to respect,) that the disease is strictly of an inflammatory nature, originating in excitement; that the effusion of serum is only a termination of the inflammation, a mere effect, which has been mistaken for the cause producing it. I have adopted their views, (and I trust, not with too much avidity) hoping that they will lead to a practice more successful, and better calculated to alleviate human sufferings.

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By Doct. Joseph Hope, who has recently published his researches into the pathology and treatment of dropsy. the opinion of its inflammatory character is strongly inculcated: and his reasonings against the existence of passive dropsy, as far as I am acquainted with them, I think, are pertinent and satisfactory.

The primary disease, says he, is a morbid action in the serous tissue, which is proved to be very closely allied in its nature to inflammation, by its being governed by the same laws, and attended by the same phenomena.

Blackall, says Doct. Hope, is entitled to much credit for his researches into the state of the urine in dropsy, by which the particular diathesis of the system is pointed out.

The true pathology of hydrothorax, appears to be inflammation, or irritation, destroying the balance between the exhalant and absorbent systems, and thereby occasioning an accumulation of fluid in the chest, which is termed hydrothorax. That this is the correct pathology of the disease appears

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In health there is continually exhaling from the parietes of the thorax (as well as from those of the other cavities) a fluid which serves to lubricate its surface, and is essential to the performance of its healthy functions; but, being removed pari passu, by the absorbents, there is no preternatural accumulation, and all is harmony and health: but this due balance which naturally exists between these ~~antagonizing~~ inverse systems being destroyed, there is discord and disease, a preternatural collection of fluid, and its consequences.

This balance between the exhalant and absorbent systems may be destroyed, it is said, by a preternatural increase of the action of the exhalants, by a diminished power of the absorbents, or by both of these causes conjoined: but I am taught to believe, that an increased action of the exhalants, is generally, if not always, the cause of the loss of balance.

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from a local or general cause - the nature of the inflammation being the same in both cases. It may likewise be divided into an acute and chronic form. When the disease is symptomatic and arises from a local cause, it is generally chronic; as when it proceeds from a disease of the lungs or heart.

Whenever the excitement producing hydrothorax, is idiopathic and independent of an organic disease of the lungs & heart. etc. its remote causes may be either of a general or local kind; and are the same which produce, when applied in a higher degree, or under different states of the system, the other forms of inflammation. Were I to speak from what I have seen myself, I would say, that the most frequent among the remote causes of the disease, is an intemperate use of ardent spirits and its attendants, such as exposure of every species.

Metastasis, particularly from the suppression of accustomed evacuations, is not unfrequently a cause of hydrothorax: of this I am prepared to testify, having witnessed several cases of the kind.

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I have known in a very few hours, from the suppression of colliquative diarrhœa, all the symptoms of hydrothorax come on, and terminate fatally in a very short time. From the amputation of a diseased limb, that had been for some time in a discharging condition, I have known such symptoms, as are indicative of a collection of water in the chest come on, and carry off the patient.

These discharges having become habitual, and the matter discharged being redundant, when prevented from escaping by one outlet, it is only diverted from its course, and falls upon the weakest part of the castle for an egress.

We sometimes have hydrothorax resulting from the striking in of the exanthemata, as scarlet fever, measles, etc. Any thing ~~thing~~ that gives to the fluids a centripetal direction, may produce hydrothorax.

I shall in the next place endeavour to enumerate the more prominent phenomena or symptoms of the disease.

Sensible of my inability to arrange these with any accuracy of order, or according to their more common occurrence, I enter on the task with considerable diffidence: but I must be content with

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Unhappily both for patient and practitioner, the symptoms of this disease are generally insidious and obscure, and it advances, unsuspectedly, till it has attained a height beyond the reach of remedial agents: to this in part may, I think, be attributed its unmanageable character and fatal termination

It generally comes on with a sense of weight and obtuse pain at the præcordia, with orthopnœa, which is much aggravated by any immoderate or unusual exercise. The countenance is at first florid, with eyes suffused and watery; but in the course of the disease becomes pale and leucophlegmatic, with œdema of the inferior extremities.

The skin in the recent stage of the disease is dry and feverish, but as the disease advances, becomes cold and flaccid.

The pulse in the commencement, is generally hard, quick, strong and full; afterwards becoming, small, frequent and irregular; yet continuing, tense and excited. Startings from sleep with anxiety and palpitation of the heart; pale visage, with occasional syncope.

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When one side only is affected, most relief is afforded by reposing on that side. The urine is scanty and high coloured, depositing on cooling a red coloured sediment; the patient generally complains of intense thirst, is unusually sensible to cold, and generally troubled with a cough, which is at first dry, but afterwards attended with an expectoration of thin mucus, with difficult deglutition. Not unfrequently there is a sense of numbness about the insertion of the deltoid muscle, with stricture of one or both wrists, extending from the region of the heart.

As the disease advances, the difficulty of breathing is increased, so that the patient cannot remain in the recumbent posture for any time, but the head and shoulders must be supported erect.

The sleep is frequently interrupted by alarming dreams, out of which the patient quickly starts, with a sense of impending suffocation, resembling pretty nearly an attack of spasmodic asthma: the palpitations of the heart become more frequent and violent, and are excited by more trivial causes.

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erect, with the mouth open and gasping for air; his face and extremities are cold. his pulse feeble, and very intermitting. the lips are livid; clammy sweats break out: drowsiness, coma and delirium not unfrequently attend this stage of the disease.

The expectoration is at this stage very often bloody: now and then a sensation of water floating about can be distinctly perceived by the patient or attendant on any sudden change of posture; this is a very decisive symptom, and when evident, there can remain no doubt as to the true character of the complaint. Examination by the aid of the stethescope is a very good mode of ascertaining the existence of dropsy of the chest; also by percussion, the patient being in the erect posture: another mode is, by pressure upon the abdomen which greatly increases the sense of suffocation.

Doct. Hoyre remarks, that the definition of this disease, as given by nosologists, is pathologically incorrect, as referring rather to the effect of the disease, than to the disease itself: and that the symptoms, strictly speaking, pertain only remotely to the true disease - arising as they do, from a certain disturbance given to the lungs

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by the pressure of water upon them. Post mortem examinations frequently discover traces of inflammation, and always an accumulation of more or less fluid in the chest, which is sometimes contained in the cellular texture of the lungs; sometimes in the pericardium; encysted in an adventitious membrane; and sometimes, floating loosely in one or both of the cavities of the chest.

The quantity of water varies considerably, there being sometimes only a few ounces, and at other times, several quarts. The lungs are found compressed and reduced in size, according to the quantity of water effused. The fluid is generally of a yellowish colour, and possesses properties analogous to serum.

The diagnosis of hydrothorax is sometimes very difficult, so much so, that the most intelligent and experienced physician is liable to be embarrassed, and is frequently unable to determine on the precise nature of the disease. The diseases with which it is liable to be confounded, are asthma, emphysema, angina pectoris, and organic affections of the heart. To distinguish it from these, the practitioner must attend diligently to the symptoms, and institute a strict inquiry into the whole history of the case.

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It may be distinguished from asthma, by symptoms attending the former, that do not attend the latter, and vice versa. In the former, we have a general leucophlegmatic appearance, the urine is scarce and high coloured, with fits or paroxysms occurring at irregular periods, and sometimes fluctuation is perceptible. In the latter, we have fits of a periodical nature, with a wheezing respiration, the urine flows in the commencement of a paroxysm in considerable quantity, is without colour and inodorous.

In empyema, or where pneumonic inflammation terminates in suppuration, there are generally cold shiverings, and after a time, hectic symptoms appear, which do not attend hydrothorax. There is generally considerable difficulty experienced in distinguishing hydrothorax from angina pectoris, and organic affections of the heart. We can only distinguish in these cases, by a strict attention to the whole of the symptoms of the several diseases.

The prognosis of hydrothorax should be given with caution, as death frequently happens suddenly, when the patient, to all appearance, is convalescent, confounding the physician, and subverting the hopes of friends. It is acknowledged to be one of the most dangerous and unmanageable

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forms of dropsy. So seldom, indeed, has it been cured, that by many it has been considered as constituting one, in the catalogue of the opprobria medicorum. In many cases it will not even admit of alleviation, terminating fatally in a very short time; though in some cases the difficulty of breathing gradually increases, until the action of the lungs is entirely impeded by the accumulation of fluid.

From what I have expressed as my opinion in regard to the nature and pathology of hydrothorax, it might be expected that I would commence the treatment with the antiphlogistic plan in its fullest extent. Venesection is indisputably one of the most important remedies in the incipient stage of the disease, and in patients of a full and plethoric habit, is indispensable: it should be carried as far as is consistent with the safety of the patient.

In the management of the disease under consideration, the state of the system should never be lost sight of, and to regulate it, nothing is equal to blood-letting; it removes congestion, subdues inflammation, and restores that just equilibrium which is so essential to health; proving thereby one of the most powerful means of ~~in cases of~~ dispersing the watery accumulation, and removing the immediate cause; it also prepares the way for the reception of

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consecutive remedies. The nitrate of potash employed at the same time with the lancet, contributes not a little to reduce excitement, and is certainly an excellent adjuvant. The cream of tartar is also used during the excited state of the system, to answer the same indication as the preceding remedy. Emetics are sometimes employed with the view of relieving the lungs, from accumulations of mucus, but they are generally considered of doubtful utility.

Purgatives are prohibited in all diseases of the breast, and it is said to be sufficient, to keep the bowels in a soluble state, by mild laxatives; I have been taught, however, that they may be pushed much farther, without injury, and in fact, with decided benefit. Doct. Styre, prizes them pretty highly.

Topical bleeding, by cups applied to the back or between the shoulders, or leeches to the side, is very serviceable. These remedies act upon the principle of revulsion or derivation, and tend greatly to relieve the local congestion or inflammation, after the general inflammatory diathesis has been sufficiently subdued, by the preceding remedies.

We next employ vesicatories, these constitute a very excellent set of rem-

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edies. a blister sufficiently large to cover completely the breast, should be applied. and reapplied as soon as it heals. or kept discharging by stimulating ointments. These remedies divert the course of the fluids. and prevent further effusion, or lessen that which has already taken place. A seton in the side is also very serviceable.

In speaking of the employment of the lancet. I should not have omitted to mention. that we very frequently meet with cases, in which it cannot be used with much freedom, but requires to be employed with judgement and caution; as in those of the debauched and intemperate: the constitution in these cases is always more or less enervated. though the pulse may indicate a contrary condition, and if blood be pretty freely detracted. the probability is. that the system will not react. and the patient will sink. in consequence of the loss of accustomed stimuli: this fact is well established by experience.

These cases are to be managed by topical bleeding and blistering. and afterwards. by such remedies as I shall hereafter notice.

After the remedies which have been enumerated have been carried to the proper extent. the next thing to be done. is to remove the flu-

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id, if there be any remaining in the chest. and for this purpose, we have recourse to the class of medicines called diuretics.

In the employment of diuretics, great circumspection is necessary; and the practitioner must be regulated entirely by the state of the system. many of the diuretics that are used in hydrothorax, are of a stimulant or irritant nature, and if employed while there is much inflammatory disposition existing, never fail to do mischief: they aggravate inflammation, and serve only to back up more permanently, the different emunctories.

This class of medicines appears to be very uncertain in their operation, having no positive action on the kidneys, but acting on the different organs or parts, according to their different states of susceptibility: proving alternately, diuretic, diaphoretic, or purgative; and also acting, very often, as diffusible stimuli.

When they act on the skin, kidneys or bowels, singly, their influence over other organs, is comparatively trivial, or not at all felt: as when they prove diaphoretic, they do not excite the action of the kidneys.

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their operation, we are directed to keep the patient cool, out of bed, and barefoot in a damp room, or on a damp floor. These rules I do not think absolutely necessary, since the action of the skin and kidneys appears to be vicarious; and if it be most agreeable to the feelings of the patient to be kept moderately warm. I think it allowable, as I have known diuretics acting on the skin to prove highly serviceable: and as exposure to cold, which I believe to be an auxiliary cause of the disease, might increase congestion and inflammation, by determining the fluids towards the internal parts.

The first of the diuretics which I shall mention is the squill. This article properly timed is decidedly one of the most active and efficacious of the class, and appears to be in very general use. In the public institutions of Philadelphia, it seems pretty nearly to have superseded all other remedies: it is said to be much improved by using it in combination with calomel: this combination should be carried to the extent of a moderate ptyalism; It acts it is said simultaneously on the kidneys and absorbents. The next article is the digitalis. Than this no medicine perhaps in

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the materia medica has maintained a more fluctuating and unsettled character. While some extol it as being a most powerful and efficacious remedy; others, declare it to be inert and useless. As far as I have seen it tried it has certainly done good. Professor Chapman, observes, that if, indeed, there be a fact in the practice of physic so deeply rooted in certainty, as not to be disturbed by cavils or disputation, it is the utility of digitalis in dropsy.

A good deal has been said concerning the state of the system to which it is best suited. By some, it is said to be best suited to those cases which proceed from a diseased state of the heart and by others, to cases of intemperance, or to the weak and flaccid fibre.

Professor Chapman remarks, that, while there is much activity in the pulse, and a considerable portion of general strength remaining, it will prove insufficient, and, perhaps, mischievous.

This article must be used with caution, and the pulse, and condition of the system, must be closely watched; for it may sometimes be given to a considerable amount, without producing any sensible effect, and then suddenly displaying its powers, and endangering if not destroying the life of the patient. The digitalis, appears to do good by dimin-

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ishing arterial action, and consequently preventing or diminishing effusion. When the effects of this medicine are produced, they are apt to continue for a considerable time, producing depression of pulse, debility and a copious flow of urine.

Another singularity which attends the operation of digitalis, is the influence which position has over the pulse, the pulsations being much increased by standing, and very much diminished by lying: in judging of its influence on the system these circumstances should be recollected. If, from the use of this article, any anomalous symptoms appear, it should be immediately discontinued.

The colchicum autumnale, is said to be a very good remedy in dropsy, and under certain circumstances, I would certainly give it a trial in hydrothorax.

In cases of hydrothorax proceeding from metastasis, or translation, from the suppression of accustomed evacuations, as colliquative diarrhoea, discharging ulcers, etc. the great object is to re-establish the original discharge or disease. When proceeding from the suppression of colliquative diarrhoea, the active hydragogue purga-

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And when from repelled exanthemata, the cutaneous disease must be restored: and for this purpose, we resort to the warm bath, blistering, and in some cases bloodletting, general and local; emetics in these cases are sometimes very beneficial.

In equivocal cases or such as are likely to be compounded with derangement of the functional actions of the heart, a combination of squill, calomel and digitalis generally answers very well: the squill and calomel, constituting, as I have already said, an excellent remedy in hydrothorax; and the digitalis, promising more than any other medicine in affections of the heart.

In regard to the use of liquids in dropsy, there has been a good deal of caviling: but I believe practitioners are pretty generally agreed as to their utility and allow them to be taken ad libitum. They allay that intense thirst, which is always so distressing, and prove

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excellent auxiliaries to the diuretic medicines. I have noticed I believe, the leading remedies in the treatment of hydrothorax: I shall therefore content myself; though I am aware that there are many others, that are employed successfully, and should by no means be overlooked in practice. what I have said on the subject, will no doubt, be sufficiently tiresome to the reader.

I am sensible that I have digressed, and extended my remarks beyond the proper limits of my province, in entering into the modus operandi of the few remedies of which I have spoken: but I hope, (with a degree of sanguinity) that these lines will fall into the hands of those who are not unwilling, to extend clemency to the inexperienced novice, and humble student.

I must here observe that what I have said on this subject, is entirely borrowed or compiled; having had no experience, (a sine qua non, to an original writer) I have been compelled to make extracts, which I fear I have done incorrectly. Though raw as I am of experience, I feel a hope that I have made some advancement towards acquiring a knowledge of the principles of the science: if not it has been owing entirely to my own

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delinquency: the extensive field, the ample and unparalleled advantages held forth and extended from the university of Pennsylvania, to the student of medicine, candour compels me to acknowledge; and notwithstanding the objections (frivolous and unfounded) which are urged against it, and the rivalry which is springing forth from every quarter: I am firmly persuaded, that it will remain unshaken and unmolested. The high reputation which it has hitherto sustained, and the very distinguished talents with which it is at present adorned, bid very fair, to exalt it far above all opposition, and support its preeminence.

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